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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHANG, AUDREY Y	
ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 11/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/817,797	HERMANN, MICHAEL	
	Examiner	Art Unit	
	Audrey Y. Chang	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3 and 4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3 and 4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on August 30, 2005, which has been entered into the file.
- By this amendment, the applicant has amended claims 1, and 3-4.
- Claims 1 and 3-4 remain pending in this application.
- The rejections to claims under 35 USC 112, first paragraph, set forth in the previous Office Action still holds, for the reasons stated below.

Response to Amendment

1. The amendment filed **August 30, 2005** is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the **amended claims 1 and 3-4** recite the following phrases (1). A light source means ... at a *known coordinate location*, (2). A first two-dimensionally readable optoelectronic sensor ... at a *known coordinate location*... (3). Based on the coordinates detected relative to coordinates at which the at least one light beam would be detected if the parallel and angular offsets of the elements are zero". The specification simply **FAILS** to give explicitly support for such phrases and features.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 1, and 3-4 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The reasons for rejection based on the newly added matters are set forth in the paragraph above.

4. **Claims 1 and 3-4 are rejected under 35 U.S.C. 112, first paragraph**, as based on a disclosure which is **not enabling**. The *specific* output signals from each sensors and the specific information concerning the light source, (such as either the measurement of pulse time of the light travels to each sensor or the specific distance set for the light source means to each of the sensors) and the *function* of the second sensor and the fixed relative alignment between the two sensors as *related* to the rest of the information are *critical* or *essential* to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). At this juncture, the specification and the claims **only teach** to have the **at least one** of the *sensors* connected to the second element, (in fact

claim 4 even **fails** to provide any connection between the light source and the sensors to any of the elements which makes the detection even more mysterious) and having the light *reflected* from the first sensor to the second sensor, (both on the second element), but no relative information is given concerning each signal from the sensor to the light source means, which is connected to the first element. To the most, the two sensors only have information to determine the relative position between the two **sensors** but **not the two elements**. It is not clear how can the "relative parallel offset and angular offset" of the *light source means,* (amendment to the claims), be determined by "*computing the relative position of the light source means relative to the incidences of the at least one light beam on the surfaces of the two-dimensionally readable optoelectronic sensors based on the coordinates detected relative to coordinates at which the at least one light beam would be detected if the parallel an angular offset of the elements are zero*" (amendment to the claims). If the incidence of the light on the first sensor is enough for the computation what is the point to have *the second sensor*? And how does this device differ from simply placing a regular sensor at the element that intended to be measured? It appears, according the description of the **amended** claims 1, and 3-4 this is not any different from putting an *ordinary* sensor at the second element and try to detect the incidence of the light from a first element. Is this what is being disclosed here? The specification at this juncture FAILS to really disclose the **fundamental principle** of the operation of the device. The amendment to the claims is being added either without support from the specification or is in general contradicting to the vague disclosure of the specification.

The applicant is once again reminded respectfully that a two-dimensional readable optoelectronic sensor is like a *camera* it can only register the *point* that the light strikes the

sensor, the information of the point cannot be enough to determine the relative position between the light source means and the sensor, in particular the relative distance certainly cannot be determined by a point. Furthermore, the specification and the claims **fail** to teach by having the light reflected from the first sensor to the second sensor, which are both on the second element, (that to the most give relative positional information between the two sensors on the second element), will give information to determine the relative position between the first *element* and the second *element*. This process is like by measuring the length of the sofa will not tell you how *far* the sofa is located from the door or where is the sofa relative to the door. The claims therefore **fail** to provide workable devices.

Claims 1, and 3-4 have been amended to include the features that the light source means is connected to the first of the two elements at a *known coordinate location* and the at least one of the two sensors is connected to the second element at *a known coordinate location.* If this is the case, which is very doubtful and completely not supported by the specification, then simply using the two **known** coordinate locations one can *calculate* the relative location between the two elements since this means the coordinate locations of the two elements are KNOWN and can be calculated to determine the relative spatial location WITHOUT even using the device at all. This makes the device totally redundant.

Claim Objections

5. **Claims 1 and 3-4 are objected to because of the following informalities**:

(1). **Claims 1 and 3-4 have been amended** to include the phrases "known coordinate location", "coordinates detected" and "the coordinates", that are confusing and indefinite since it

is not clear (1) how do these coordinates relate to each other? And (2) it is not sure if these coordinates are measured in the same coordinate system or not? The coordinate systems for the light source and for EACH of the sensors can be very different.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1 and 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Holzl (PN. 5,026,998) in view of applicant admitted prior art.

Claims 1 and 3-4 have been significantly amended however the amended features are being rejected based on 35 USC 112, first paragraph, for the reasons set forth in the paragraphs above. Since the added features directly contradict to the operation of the optical device, they cannot really be examined with details.

Holzl teaches an *alignment measurement mechanism* for measuring the relative positions between *two shafts* (1 and 2), *serves as the two elements*, wherein the mechanism comprises a *light source* (8) for generating a light beam (s) that incidents on a first and second *optoelectronic detectors* (9 and 10, Figures 2 and 3) that are connected to the second shaft (2). The two

optoelectronic detectors are two-dimensional readable sensors that each generates two dimensional position signals as shown in Figure 2. Holzl further teaches that *a data converter* (3) and a *computer* (4), serve as the *electronic means and computer*, are included for processing the detected positional signal of the detectors to measure the relative position of the two shafts. The two dimensional position signals generated by each of the position detector are corresponding to the **incident points** of the light on the surface of each of the detectors. The calculating electronics for computing the relative positions from the detected signals are implicitly included to determine the relative positions. It is implicitly true that only portion of the light incident on the first optoelectronic detector will reach the second optoelectronic detector.

With regard to the amended features, it is implicitly true that (1) one can determine the coordinate locations of the light source and the sensor by other detection means if needed or be preset and (2) a simple calibration will be able to determine the detected coordinate at the sensor when there is no offset and simply using that point as the reference to determine the degree of offset by the detected light incidence point of the sensor. The Figures 1-2, explicitly indicate that such process can be done.

This reference has met all the limitations of the claim with the exception that it does not teach explicitly the arrangement of having the light incidents on the first detector is *reflected instead of transmitted* to the second detector. However it is implicitly true that whether the light incident on the second detector is reflected or transmitted from the first detector the **operational principle** for obtaining the relative position between the two shafts or elements do not change. Since the principle is based on calculating the positional signals detected by the two detectors

about the incident points of the light on the two detectors, the modification or the difference, concerning either reflecting or transmitting light from one detector to the other detector, does not change the function of detecting and calculating the relative positions of the two shafts. This difference is therefore considered as an obvious matter of design choice to one skilled in the art for the benefit of providing different design for the measurement mechanism. Furthermore, **applicant admitted prior art** teaches that a **reflective** type optoelectronic sensor such as CMOS sensor circuit is ***commercially available***, (please see page 5 lines 14-20 of the specification). It would then have been obvious to one skilled in the art to use a reflective type of detector to make the light reflected from the first detector to the second detector for the benefit of providing a more compact system.

With regard to the housing, the references do not teach such explicitly however it would have been obvious to one skilled in the art to use a housing for the detectors for the benefit of blocking out unwanted light to reach the detectors so that the detectors detect the signals more accurately.

Response to Arguments

8. Applicant's arguments filed on August 30, 2005 have been fully considered but they are not persuasive. The amendment to the claims have been fully considered and they are rejected for the reasons stated above. Applicant's arguments are mainly based the amendments to the claims and they have been fully addressed in the paragraphs above.

9. The amendment and the specification of this application *still* makes the operation of the device very confused, especially it is not clear what is the role of the second sensor in the

operation in determining the relative offset of the two elements. The examiner would like to cite the **reference (US patent 4,330,212) by Miller** to the applicant in the effort to understand the principle of the device of the instant application. Miller teaches a device for measuring the "pitch and yaw" (which is the out-of-plane angular off-set of the target with respect to the reference), by projecting a diffraction light pattern (light pattern means more than two light incidence points) on and through the target (17, Figure 2) at the location near the light source, a reference diffraction pattern on the target can be generated and the diffraction pattern would pass through the target (17) to a reflective ruling (21). The reflective ruling which can be located on the second element reflects the diffraction pattern back to the target. If there is an angular offset between the reflective ruling (21) and the target (17) then the reflected pattern on the target as compare to the reference diffraction pattern on the target will reflected the angular offset information, (Figures 2a to 2c). Since only a light pattern (i.e. more than two light incidence dots can really reveal the pitch and yaw information (or out of plane angular offset), it is suspected that if the second sensor in the device of the instant application is there to simply generate a light pattern (i.e. two light incidences points instead of one) to help to reveal the angular offset information.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US patent issued Miller (US patent 4,330,212) discloses a device for measuring "pitch and yaw".

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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